Lava Beds National Monument

Mushpot Cave Presentation: California 4th-6th Grade Curriculum Standards

California 4th Grade Science Curriculum Objectives

Earth Sciences

4. The properties of rocks and minerals reflect the processes that formed them. As a basis for understanding this concept:
    a. Students know how to differentiate among igneous, sedimentary, and metamorphic rocks by referring to their properties and methods of formation (the rock cycle).
5. Waves, wind, water, and ice shape and reshape Earth's land surface. As a basis for understanding this concept:
    a. Students know some changes in the earth are due to slow processes, such as erosion, and some changes are due to rapid processes, such as landslides, volcanic eruptions, and earthquakes.

Investigation and Experimentation

6. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:
    a. Differentiate observation from inference (interpretation) and know scientists' explanations come partly from what they observe and partly from how they interpret their observations.
    b. Formulate and justify predictions based on cause-and-effect relationships.

California 6th Grade Science Curriculum Objectives

Plate Tectonics and Earth's Structure

1. Plate tectonics accounts for important features of Earth's surface and major geologic events. As a basis for understanding this concept:

a. *Students know* evidence of plate tectonics is derived from the fit of the continents; the location of earthquakes, volcanoes, and midocean ridges; and the distribution of fossils, rock types, and ancient climatic zones.

b. *Students know* Earth is composed of several layers: a cold, brittle lithosphere; a hot, convecting mantle; and a dense, metallic core.

c. *Students know* lithospheric plates the size of continents and oceans move at rates of centimeters per year in response to movements in the mantle.

d. *Students know* that earthquakes are sudden motions along breaks in the crust called faults and that volcanoes and fissures are locations where magma reaches the surface.

e. *Students know* major geologic events, such as earthquakes, volcanic eruptions, and mountain building, result from plate motions.

f. *Students know* how to explain major features of California geology (including mountains, faults, volcanoes) in terms of plate tectonics.

Shaping Earth's Surface

2. Topography is reshaped by the weathering of rock and soil and by the transportation and deposition of sediment. As a basis for understanding this concept:

d. *Students know* earthquakes, volcanic eruptions, landslides, and floods change human and wildlife habitats.

Investigation and Experimentation

7. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

a. Develop a hypothesis.

e. Recognize whether evidence is consistent with a proposed explanation.

g. Interpret events by sequence and time from natural phenomena (e.g., the relative ages of rocks and intrusions).

h. Identify changes in natural phenomena over time without manipulating the phenomena (e.g., a tree limb, a grove of trees, a stream, a hillslope).